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CAUSES OF TUMORS*

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A catalogue of the causes of tumors will include every pathogenic factor that is known or has been brought forward as a cause for an abnormal condition, and so much has been said about this subject that many pathologists have come to the conclusion expressed by McCallum in his text-book of Pathology to the effect that we know nothing about the cause of tumors and that time spent in a discussion of this subject is largely time wasted. But no scientific or other problem was ever solved in this manner. It is to be hoped that by increased rather than diminished discussion, we may, by following a hint given here or there arrive at something definite, and in the meantime bring out points which will enable us to combat this, one of the greatest scourges of the human race. I have neither the time nor the inclination to discuss at length all the theories of tumor formation, but there are a few which are being constantly reiterated or re-discovered which it may be worth while to discuss.

One of these is Cohnheim's misplaced cell theory. This theory is based on the assumption that in the development of the body, cells are partitioned off or separated from the group to which they belong and are included in masses of cells which develop into different tissues or organs, or the persistence of embryological structures which should have involuted and disappeared; that later some stimulus excites these isolated cells to development, and, being freed from conditions which surrounded them at the time they should have developed, they grow wild from lack of control. While it is undoubtedly true that such instances occur, there is no evidence to warrant the fact that they occur as often as tumors do, and furthermore, in localities where tumors most often occur, the possibility of such accidents is least, whereas places where opportunities for such accidents are greatest tumors are less frequent. It often also happens that tumors are diagnosed as being of a certain class which would have indicated such an origin when a closer, more careful study shows that the difficulty has been with the diagnostician. A good example of this is the hyper-nephroma of the kidney. That such a tumor should be primary is extremely unlikely and a more careful study of these tumors has led most pathologists to question whether such tumors are every primary in the kidney. Furthermore a careful study of various pathological processes reveals the fact that tumors arise from normal cells that not only belong where they are found, but also have previously been functioning normally, so that this theory cannot be accepted as a general explanation of tumor formation.

Another theory which has held a long time and has recently been revived is the infection theory. There is no question but that infections play a part in tumor formation. It is also true that tumors arise without infection in sites where infection is highly improbable or where no evidence of any infection can be found; and further, while it is true that infections and even parasites have been found in tumors it is also true that there are tumors of the same type arising from the same tissues in which no infection or any evidence of any infection of any type can be found.

Another theory which has been somewhat timidly expressed, but which is gaining strength is that tumors arise in response to chemical stimuli or the lack of certain chemical substances in the environment of the cells. Again it is undoubtedly true that chemical irritation plays a part in tumor formation, but just how much weight must be given to this theory depends largely on what is included in the terms, chemical irritation, or deficiency.

Similarly, the traumatic theory has its evidence and its exceptions, and while it is true that no student of the subject will deny that trauma plays a part in tumor formation, it is

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also true that tumors form where traumatic irritation is next to impossible, for example, in the brain, or where it is highly improbable, as tumor of the pancreas or other internal organs. It is the opinion of the author that we will come much nearer solving this problem if we cease to consider tumors as an extraneous something, or make a priori deductions and conclusions, but turn our attention to a closer study of the tumors themselves, and of the cells which compose the body, and of general biological laws, for the reason that the tissue cells are biological creatures.

A careful study of tumors reveals many similarities between them and normal tissues. They always arise from normal tissues. There is no case in which a tumor is composed of cells which are essentially different from those comprising normal structures, so that a tumor can in no sense be considered a parasite from the standpoint of being an organism independent of its host. The tumor cells resemble the normal cells near enough that in most cases it is possible to tell from what tissues the tumors arose, so that it is possible to classify tumors on the basis of the histological origin or resemblance to normal tissues. They may depart widely from the adult tissue from which they arose, so that they at first sight appear to be different tissues, but they never depart so widely that they do not resemble either the adult tissue or its ontogenetic predecessors. The tumor cells tend to arrange themselves in a manner similar to the normal tissues; a fact which is indicated by the names given to tumors. The cells multiply and the tumors increase in bulk by the same processes which are observed in normal tissues. These processes may be more or less atypical in detail, but we do not find tumor cells reproducing by asexual methods or by simple division, but always by mitosis. They tend to develop in such a way as to carry on the functions similar to the normal cells from which they spring. We never find tumor cells so far departing from the normal as to become cells of a different type of tissue than those from which they arose. Thus we never find tumors of epithelial origin changing to tumors of connective tissue or vice versa. We may find, however, that tumors of connective tissue may become or have within their mass bony or cartilaginous elements. But this is explained by the simple fact that the predecessors of bone and cartilage are modified connective tissue cells. We also find tumor connective tissue producing mucous; but this is again not unheard of, for we have a very common example of Whorton's jelly.

On the other hand we find that cells composing tumors always depart more or less from the normal or from the tissues from which they arose in the general arrangement and from the fact that tumor cells nearly always tend to revert to a more embryonic type, although this reversion may be slight. But this is a phenomenon which occurs in all normal cells at the time of regeneration and at a time of multiplication in the process of repairing injury. The tumor cells are always devoid of useful function although in the great majority of cases they attempt to perform similar functions to those of the adult cell, so that in summing up these facts we must come to the conclusion that tumors are atypical new growths arising from pre-existing tissues. This must lead us to the conclusion that the cause of tumors must be some factor working on the cells of the body bringing about an intensification of the property of all cells to reproduce their kind, but at the same time acting in such a way that there is a profound disturbance of the processes of that phenomenon. In other words the potentiality to tumor formation is contained in every living cell of the human body, and the possibility of tumor formation is an intrinsic property of all living cells. The probability of such a phenomenon taking place depends on whether or not the cell is subjected to this baneful influence. So that the problem of solving the cause of tumors resolves itself into finding out those conditions of the environment and stimuli within the environment which lead to active multiplication of the cells, and here again we must study the tissues under the conditions of normal or ordinary life, and try to seek out the various factors which induce cell multiplication.

One of the most fundamental stimuli to cell division is a disturbance of the equilibrium between the size of the mass of cytoplasm to nuclear surface, so that well nourished cells have a greater tendency to multiply that those less well nourished. It is stated by some authorities that tumors are frequent in individuals who are apparently over-nourished or over well fed. Another fundamental law of cell division or multiplication is that when any organism approaches a death due to slow acting deliterious factors in the environment there is an extra effort made at reproduction, a phenomenon which is often seen exemplified in trees and flowers blooming when the plant itself is dying. We see among lower organisms sometimes specialized forms of reproduction at times when the equilibrium of vital conditions is disturbed or when the conditions of environment are immicable to the physiological health of the individual, an example of which is the sporula-

tion of certain bacteria, the formation of the encysted forms of amœbas, or the gemules of fresh water sponges. In case of human or animal tissues we find tumor formation especially of epithelial cells most frequent among older people of the so-called cancer age. This superstition is based on the fact that carcinomas are progressively more frequent when the individual gets to the point when as a result of age, involution processes are more extensive. It has also been stated that certain types of carcinoma are more frequent among those poorly nourished. Also recent studies have demonstrated the fact that by far the greater number of tumors arising from stratified squamous epithelium arise from the middle layer, a layer, which as you know is progressing from well nourished to poorly nourished or actually starved cells.

It has also been found that cell multiplication is induced by the presence or sometimes by the lack of presence of certain chemicals in the environment of the cells. It has long been known that the unfertilized ova of certain lower forms of animal life can be stimulated into parthogenic development by merely placing these unfertilized ova in solutions of certain chemicals. Reinke produced atypical epithelial growth by injecting four per cent ether into the eye of a salamander, and found that the atypical growth would continue to grow when transplanted into the peritoneum of other salamanders. B. Fischer found that the introduction of Sharlach R in olive oil underneath the skin produced carcinoma-like proliferation of the epithelium in rabbits' ears. Similar results were secured by Lameson and Haga by the use of Sudan III. Haga also produced an adenomatous growth in the rabbit's stomach by feeding lanolin. The occurrence of malignant tumors in paraffin workers is apparently due to some such chemical irritation and there is little doubt that the proliferation seen in the neighborhood of certain parasites such as the adenomatous dilitation of the bile ducts in infections of eimeria or the carcinoma which has been produced by Febiger by the introduction of spiroptera neoplastica and other parasites are due to the chemical irritation of the by-products of these parasites.

It is a well known fact that the development of certain tissues and organs in the body is dependent on the action of other organs and tissues such as the development of the placenta being dependent on the activity of the corpora lutea, or the development of the secondary sex characteristics being dependent on the activity of the gonads, and it may very well be possible that the development of tumors is more or less dependent on excesses or deficiencies in the synthetic products of cells either within the same tissues or other tissues, in fact it has been stated that the growth of chorion epithelioma is dependent upon persistent or atypical luteal functions.

Various investigators have noticed changes in the chemistry and chemical reactions of the blood and other tissues in cases of tumors. Beebe and Clowes have demonstrated an excess of potassium and deficiency of calcium in rapidly growing tumors free from necrosis. The percentage of pentose is quite different in malignant tumors and normal tissues. The relative proportions of fat and lecithen is different in rapidly growing and degenerating tumors. The extracts of tumor tissue and normal tissue split polypeptids in different manner. It has been found by Brieger and Trebing that the antitryptic power of the blood was altered in cases of malignant tumors. It has also been found that the surface tension of the blood is altered by the presence of malignant tumors. The sugar tolerance of the system is quite changed in malignant disease, so much so that this test is almost diagnostic. Many other instances of similarly changed reactions might be given, but the important point in all these abnormalities is, do these alterations and changed reactions precede or follow the development of malignant diseases?

It is a well known fact that any injury to any cell, regardless of the nature of the injury, so long as it does not change the cell in such a way as to prevent its performing its vital functions, will stimulate repairative and reproductive processes. These processes are essentially no different from those displayed in tumor growth except that in one case they proceed in typical fashion and orderly manner and that the process ceases when the injury is repaired, whereas in tumor growth the processes are atypical and disorderly, and there is apparently no limit to their extent.

From the foregoing it is apparent that tumors are merely cell reproductions under such abnormal conditions or aroused by such abnormal stimuli that the process proceeds in an atypical and unrestrained manner. We have also seen that the power to multply is inherent in every living cell, and that such multiplication is a very normal function and one that is manifested in the ordinary life of a great many, if not most cells under circumstances such as regeneration or convalescence after mild injury or the actual replacing of tissues lost through injury, and that such reproduction is normally under the control, first, of the inherent properties of the cell itself, and second, the influence of the secre-

tions of the other cells. The problem for us then becomes under what abnormal conditions, or might better say, unusual conditions this process may be provoked and how may there be brought about disturbance of normal control?

Among the forces thus operating, perhaps one of the commonest is a long continued demand for the exercise of these regenerative and reproductive functions on the part of relatively few cells. Such demand arises under conditions of long continued mild trauma, such as the irritation from a carious tooth, or the classical example of the clay pipe stem. Another condition giving rise to such demand is long continued mild inflammatory process such as we see for example in endocervicitis. Some authors claim that carcinoma of the uterus is preceded in 90 per cent of the cases by this mild inflammatory condition. Involution processes such as those occurring in advanced life or the advanced life of individual organs under which conditions there is evidently a lessening of the powers of control of tissue activity coupled with the phenomenon mentioned above of the extra effort of reproduction under such circumstances. In my own experience I have never seen a tumor of the breast in which there was not evidence of a previous mastitis accompanied by retrogressive processes. Chemical irritation such as the action of cigarette smoke on one spot on the tongue, the chemicals to which the parts of the body are exposed in certain manufacturing processes, the irritating action of certain chemicals in the environment such as the by-products of parasites or lipoid solvents; all of these factors acting singly or in combination on the one hand provoke cell proliferation, and on the other hand interfere with the normal control to such proliferation. Still more subtle and less well understood are the changes in the chemical composition of the blood whereby cretain mineral salts are in excess or deficiency, or as has been suggested above, probable other changes which may include the lack of certain anti-bodies; all seem to play a part in this wild growth of new tissues, so that our problem of determining the cause of tumor growth in a particular case becomes a very complex one, and the avoidance of the inception or the check of such growth becomes one of the most complex of all problems to be solved in the continuance of health and well being. But any practitioner can do a great deal in cutting down the mortality from tumors, if by advice and practice he, on the one hand educates his patients to the prompt attention to chronic inflammations and traumas and, on the other hand promptly and effectively treat any such lesions that are brought to his notice. So far as we know now this is our only means of checking this growing scourge of the human race.

Discussion: RALPH E. MYERS, M.A., M.D., OKLAHOMA CITY.

Unfortunately Dr. Turley has worked out his subject so carefully that he has left little, if any, room for argument. Accordingly, I shall endeavor to enlarge on certain points which he has brought out and to consider briefly some questions which he didn't have time to take up.

In the first place I think it would be profitable to look into the question of heredity. Everyone who deals much with cancer becomes aware that histories of cancer patients pointing to hereditary causes are the exception rather than the rule. Perhaps this is due to the fact that any history dealing with this question of heredity must necessarily be very incomplete. At any rate Dr. Slye in an extensive series of experiments on mice has seemed to prove that for mice, at least, spontaneous cancer is inheritable. In a series of experiments extending over several years she has found that she can segregate mice with cancer and non-cancer tendencies—the non-cancer tendency being dominant. By selective breeding cancer could be either implanted or eliminated. While these experiments seem to be quite conclusive, I think some recent work on rat liver-cyst sarcoma by Bullock and Curtis at the Crocker Institute gives us the proper angle from which to view this question. By feeding rats the eggs of Taenia Crassicollis, the cat tapeworm, the livers of these rats become infected with the larva form, Cysticercus fasciolaris. In some of these rats malignant sarcomas develop in the cyst wall. By inter-breeding those rats susceptible to sarcoma, they have been able to produce strains 100 per cent of which become sarcomatous, if, and only if, this tapeworm irritant is present. If the cysts are not present, the susceptibility to sarcoma remains latent. The obvious conclusion to be drawn from this experiment is that heredity is not the cause of cancer. Doubtless animals, including man, do inherit varying resistances against cancer. The same irritations which would cause cancer in one does not cause cancer in the other because of less susceptibility to the cancer process. To me this seems the sane view of the question of heredity.

Dr. Turley has suggested that cancer may to a certain extent be dependent upon some aberrations in the internal secretions. There are no doubt certain facts which point in

favor of this idea, but one should wander into the nebulous realm of endocrinology with the greatest caution. Far be it from me to suggest the possibility of any addition to the extended list of human ailments supposed to be amenable to pluriglandular therapy.

The idea of a bacterial cause of cancer as evolved by Dr. Smith from his plant cancers caused by Bacterium tumefaciens is a rather fascinating one. However, the only animal experiments to support this hypothesis are Rous's chicken sarcomas produced by a filterable virus. Experimental cancers caused by worms, by application of tar, of Sudan III, etc., must necessarily point very strongly against this idea. But they all do have something in common which we can cover by the term irritation as used in its broadest sense. I quite agree with Dr. Turley's general conclusions.

Likewise I am entirely in accord with the ideas he expresses as to the means of checking this scourge. While one should endeavor to cut down useless surgery to the minimum, it is far better to eradicate now and then some non-cancerous lesions than to always wait until we are dealing with cancer beyond peradventure of a doubt.

C. J. FISHMAN, M.D.

It seems to be generally accepted that whether benign or malignant tumors are considered, there must be something about the inherent nature of the cells of the organism which, under proper conditions, tend to grow and generate the type of tissue whcih is inherent in that particular cell. We may speak of an "Anlage" which may produce, sometime in the future, under proper conditions, tumor tissue. What these factors, beside the inherent nature of the cells are, we do not definitely know. There may be something in our modern way of life, provided we prove definitely that tumor formation is more common today than it has been in the past, which should explain the greater frequency of tumor, of either benign or malignant type.

However, one must consider that the general mortality has been so much reduced in the preventable diseases, that tumor growth and prevalence is perhaps relatively more common than actually existing as compared with a generation or so before. Certainly, the age of the expectancy of life has been increased remarkably, and that must be taken into consideration always, when speaking of disease in older individuals.

Buckley, of New York, suggested at one time that malignancy was more common in meat-eating people, and of course it is quite possible that this is true, because the nitrogen products of metabolism may be one of the irritating factors in these cases, which will allow the primary tumor Aniage to develop by the irritation from these products.

All experiments seem to prove two essential points in regard to the development of tumors; first, that there is an inherent tendency of certain cells to grow and to develop and second, there are certain conditions of irritation in individual cases which cause these cells to reproduce and develop a tumor formation.

Closing Summary—L. A. TURLEY, M.D.

As to the role of infections and the information which may be gotten from plant tumors I wish to say that my first study of tumors began about twenty-five years ago when I was connected with the Entomological Department of the U. S. Bureau of Agriculture, and I am free to say that I think that our knowledge of the cause of tumors has been more beclouded than clarified by the facts of plant tumors, and furthermore, this phenomenon as observed in the plant world has its exact parallel in the animal world in the action of bacillus tuberculosis causing tubercles treponema pallida causing gummas, and others which might be mentioned. These are all kinds of multiplication of tissues excited by the products of infections, but there is one characteristic difference between these lesions and true tumors, which is, that as soon as the infection is killed or removed the tissue proliferation ceases, whereas in true tumors there is no limit to the proliferation of the cells.

So far as heredity is concerned we are too apt to think of heredity in the terms of six fingers and harelip. As a matter of fact, malformations in the chemical composition of the cytoplasm of the cells are more common and more far reaching in their effects than these gross anatomical abnormalities. There are in medical literature histories of families in whom the individuals were subject to softening of the brain at about a certain age. This is evidently a case of heredity of the nature of which I speak. It is due to the abnormalities in the structure of the nerve tissues of these individuals. So far as the cells are concerned their abnormal structure and consequent abnormal funciton no doubt has a profound effect on what happens to the other cells in perhaps other parts of the body. In this way there is no question but that heredity plays a part in the susceptibility of or probability of tumor formation, provided appropriate stimuli are received later.

One of the men in discussing this paper stated that no new facts have been added to

our knowledge of tumor formation, and also spoke of the probability of finding one cause of tumor formation. In my opinion one of the most beclouding factors in our whole study of tumor formation is the search for one cause of all tumor formation or of all tumors of the same kind. We know that a great variety of factors in the environment, and different classes of stimuli will result in similar physiological activity, and also in the inciting of pathological processes, as for instance, necrosis, or as has just been emphasized, tissue proliferation. Since this is true of all other pathological processes, why should we still be seeking for one cause of tumors. If we get away from this one cause idea we will be relieved of a mill stone about the neck of progress in solving this question. I do not quite understand what the Doctor meant by no new facts. Many new facts have been discovered with regard to tumors. No outstanding, revolutionary, flamboyant facts, but bits of evidence here and there which have in the past modified and are daily modifying our opinions and ideas on the subject of the cause of tumors. It is easy to understand why there are more carcinomas than muscle or bone tumors, and we can a priori predict where tumors will be most frequent and tell why, and why it is that of the seven types of carcinoma derived from stratified squamous epithelium, five of them should come from the middle layer.

The question of the effect of meat eating has been brought up. Let me comfort those who still enjoy their roasts and steaks by saying that contrary to the statement made, tumors are not more common in individuals who are meat eaters than in vegetarians, if as much so. They are not so common in meat eating races as vegetarian races and among lower animals the incident of cancers in vegetarian animals far exceeds the frequency of such lesions in carniverous animals.

I heard a statement made in the discussion of a paper in another section that habits, dietary and other habits, had more effect on the incidence and increase of tumors than perhaps any other one factor, and I do not doubt that properly interpreted this statement is true.

I wish to thank Dr. Myers for bringing out additional facts that I could not take up for lack of time. These facts have an important bearing on the question. At least they are facts that must be settled.

I also thank the other doctors for their free discussion. I am sorry that we do not have the remainder of the afternoon to devote to this subject. Its importance demands even more time.

TREATMENT OF AURICULAR FIBRILLATION*

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Before entering into the treatment of the most common cardiac condition let us first consider the mechanics of decompensation. The characteristics of heart muscle are familiar to every one, but few consider the two main forces concerned in decompensation. By these we mean the "rest force" and the "reserve force." The rest force is that force required to carry on an efficient circulation when the body is at absolute rest. The reserve force is that force which is called into action when some added exertion is entered into and speeds up the circulation to meet bodily requirements. Now when we see a heart that is decompensating it means that the reserve force has been entirely destroyed and that the rest force is not sufficient to carry on an efficient circulation. This holds true to every decompensated heart independent of the etiology. Our object then in treatment is to assist by medical means and by adjustment of the patients habits, the reestablishment of the reserve force. How are we to do this?

First, let us consider the general principles that apply to every cardiac condition. The most important of these is rest. By rest, I mean absolute rest both mental and physical. To obtain mental rest, we must remove all business troubles—must see that the patient does not have any one connected with him in a business way as a visitor. This keeps down the desire for inquiries into said affairs. He must be denied all visitors—why? Visitors always carry on too lengthy a conversation; ask too many leading questions, and many have the habit of entering into lengthy narrations about friends or relatives that have suffered from the same troubles, invariably talking about the cases that ended fatally.

What is the effect on the patient?

First, carrying on a conversation increases his exertions and destroys all the benefits he has gained. Many times the results of several days' rest have been destroyed by some talkative well-meaning friend. Next, it decreases the hope of permanent recovery and increases his mental anguish; because the laity as well as a great many physicians consider heart disease as a hopeless proposition. Next, we must obtain physical rest. To accomplish this a pleasant, well ventilated room must be selected, one that is easily isolated

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and having a comfortable bed. A Gatche bed is the most satisfactory for with this type of bed the head can be elevated to the required height without any physical effort on the part of the patient. The bed pan and urinal must be used. Often we see patient on good treatment not getting results because they are allowed to go to the bath room or to use a commode at the side of the bead.

Then sleep must be obtained. Every effort must be made to get sleep for these patients. To obtain this, we have never found a substitute for morphia. Give the patient enough for the first three or four nights to insure good sleep. McKinzie often carries his patients for the first few days on rest and morphia. It is remarkable the improvement that results from just the above. Morphia should be withheld if possible during the day for it is the wakeful night hours that cause much fretting and restlessness, and this destroys results.

Diet is next in importance. Bland, easily assimilated, yet nourishing foods should be given with frequent small feedings. Never give any articles of food that require prolonged mastication. This causes too much exertion. Make the feedings small and frequent, the stomach should never be loaded with a heavy meal. If there is general edema the Karell diet should be given. This consists of 200 cc. of milk at 8-12-4-6. Cracked ice or water 200 cc. is allowed for thirst. This diet with saline catharsis is maintained until edema begins to subside. It can then be increased, bringing in, toast, Zwieback, ice cream and very soft foods. Later, soft boiled eggs may be added. The patients condition and the decrease in edema is the index for increasing the diet. A careful check on fluid intake and urine output must be kept at all times. When some diuretic is indicated, good results have been obtained from "Diuretin" or "Theobromine Sod. Salicylate" in ten grain doses, three times a day. This applies to the chronic nephoro-pathies only, for any acute renal condition should never be stimulated. To hasten the excretion of tissue fluids, catharsis should be carried out. The salines give the best results. Excellent results may be had with magnesium sulphate, beginning with dram—one dose— and increasing the dose until two or three good liquid stools are obtained each day. After edema has subsided, catharsis should be stopped. Purging in this way will not produce marked exhaustion and will relieve the renal tissue of some of its burdens.

After outlining the above, we must next consider the use of drugs. By reporting some two cases briefly this phase can be more clearly brought out.

A. 1—Auricular Fibrillation (acute) with Mitral Regurgitation. Mr. B., age 38, contractor.

HISTORY: Three weeks ago, he noticed after some added exertion, as climbing stairs or running for a street car, that his heart beat very fast and irregular. He was conscious of suffocation and hurried breathing. He would stop and rest for a time and this would subside. About one week ago, noticed some soreness in right upper abdomen; also ankles were swollen at night. There was some increased frequency in voiding through the day, and would have to get up once every night. Lately he has been having numerous attacks of indigestion.

In past patient had measles, much tonsilitis, influenza and pneumonia. Tonsils removed after he had been having some soreness and aching in legs and joints.

EXAMINATION: Male, well nourished, weight 155 pounds. Dyspnoeic—no acites; edema of ankles—slight soreness of right upper abdomen. Heart: Apex 5th interspace, 11 cm. from mid-sternal line. Right cardiac border, 4th interspace 4.5 cm. from mid-sternal line. Rate 140 per minute. Pulse 130; pulse deficit 10. There was marked arrythmia, consisting of periods of regular beats, then coupled beats; dropped beats; and extra systoles. Blood pressure, 125-70. Over mitral area blowing systolic murmur elicited. Pulmonic sound doubled. Aortic sound muffled.

This patient was put on absolute rest—Morphia, grains a quarter (1-4) given first night and an excellent night's rest was obtained. The following morning, Tr. digitalis minims thirty (M 30) three times a day, was ordered. This was continued for three days. At that time the patient had received four and a half drams (zlvss.) or eighteen (18) cc. of tr. The heart rate had decreased to seventy-six to the minute. Dyspnoea palpitation and sense of suffocation had subsided The drug was discontinued because of toxic signs developing, such as nausea, coupled beats and emesis one time. The renal output after the first day increased markedly, and edema rapidly subsided. The patient was then given three days' rest with no medication at all. The heart rate varied from seventy-six to eighty but arrythmia persisted. As the patient was perfectly comfortable we carried him one week with no medication.

Quinidine was then brought into use. Quinidine is one of the four alkaloids of cinchona bark and it has been used for a long time in heart conditions. Oppolzer in his lectures on treatment of internal diseases 1872 begins the chapter on treatment of heart disease with,

"The best and most powerful factors in dealing with heart patients are three: Rest, Digitalis and Quinine." It remains for Frey—1918—to revive the use of quinidine sulphate on the heart to restore normal rythm. This drug should be used with caution for when given to patients not under close observation, toxic symptoms, and even death has resulted.

What are the indications for Quinidine? They are:

1. Heart that is not markedly enlarged.
2. Acute cardiac disturbance of short duration.
3. Auricular fibrillation of short duration.
4. Heart minus, serious valvular damage.

This patient was given three grains the first day to determine any susceptibility to the drug. The following day six grains three times a day was given. After some four such doses the heart became regular. Rate seventy-six per minute and patient stated that he never felt better. Medication was discontinued. Some weeks later the irregularity returned. Three doses of six grains each was given with return of normal rythm. Patient was then given twelve grains every third day. The pulse remained regular during hospital stay, of one month. This patient later reported that he feels fine. At times he notices an irregularity but three or four capsules restore normal rythm, and he carries out his normal duties with no embarrassment.

B. 2—Chronic Auricular Fibrillation. Mitral Stenosis and Regurgitation. Mrs. P, age 48. Present trouble began some three years ago, with dyspnoea on exertion; palpitation, and edema of the ankles. On exertion, as climbing stairs, she would be conscious of heart beating very fast and irregular. Also a sense of marked weakness. For the past one and one-half years has been disturbed at nights, out of a sound sleep, with a sense of suffocation. Some six months before present illness this patient was confined to her bed for one month. This attack was brought on by a series of social activities. The present illness began three weeks ago, with increase in the above symptoms—plus cough—brownishly frothy sputum being raised at times.

The past history is negative, except for usual childhood diseases; much tonsilitis and pneumonia, some fifteen years ago, there has been some indigestion and gastric disturbances —and nocturia one to two times every night for the past two years.

EXAMINATION: Large, well developed patient; weight 170 pounds. Uncomfortable, due to dyspnoea—pulmonary congestion—ascites—enlarged, tender liver. Edema of legs and ankles.

Heart: Apex in 6th, intercostal space, 14 cm. from mid-sternal line. Right cardiac border, four interspace five cm., from mid-sternal line. Apical impulse diffuse. No thrills elicited. Rate at apex 180 plus to minute. At radial 150. Pulse deficit 30—blood pressure: Systolic 140, Diastolic 70. Over the mitral area and transmitted to the axilla, a blowing systolic murmur was elicited. Along the left border of sternum a roughened presystolic murmur, aortic sound muffled. Pulmonic sound doubled.

In urgent cases digitalis should be given in quantities, so that the system is saturated within (48) forty-eight hours. Eggleston advises the administration of the physiologic dose. According to this method 1 cc. of the tincture of digitalis to every ten pounds of body weight or 1 gm. of the digitalis leaf per ten pounds of body weight. The weight of this patient was 170 pounds; allowing ten lbs. for the edema. At this weight a dose of 16 cc. of the tincture should produce the desired digitalis effects. This patient was given four (4) cc. of tincture at 8 A. M., 12 m. and 6 P. M., the first day. That night the urine output was increased markedly—Morphia gr., 1-4, produced a restful night. The following day (2) two cc. of the tincture was given at 8 A. M., and 4 P. M. Good catharsis was produced by salines and the fluid intake was limited to 1000 cc., 800 cc. being milk. The patient at the end of the second day was considerably improved. Cardiac rate at apex 120 at radial 115. Dyspnoea was not so marked.

Pardee has shown that the body disposes daily on an average of 22 minims of tincture of digitalis of standard potency. To maintain full digitalis effect 66 minums of the tincture were given on the third day for the amount excreted on first, second and third days. Thereafter twenty-two (22) minums was given each day for ten days. At the end of this time the edema had subsided and pulse rate was 82 to the minute; but markedly irregular. A rest of two days was given before using quinidine. This was administered as in the previous case. After some 24 grains had been given the pulse became regular, but accompanied by dizziness. Sense of suffocation, small, soft pulse 100 to the minute, and nausea. Quinidine was immediately discontinued. The following day the above symptoms had subsided, but rate remained at ninety to minute. The third day, after quinidinne was discontinued, the pulse became irregular and patient stated she felt much better. After some three days quinidine was again given in four grain doses, which resulted in sinus

rhythm, and the reappearance of the above toxic symptoms. Quinidine, therefore, was abandoned.

White is of the opinion that any chronic fibrillation of 1 (one) year or more standing is a contra-indication to the use of quinidine, because:

First: Any return to normal rhythm is of short duration.

Second: Danger of embolism arising from a clot formed in the auricle during fibrillation.

Third: Respiratory paralysis. A case of which has been reported by Frey.

Fourth: Sudden death has resulted.—The cause unknown, but possibly ventricular fibrillation.

This patient was again put on digitalis and it was forced until full effects were obtained. The pulse remaining from 75 to 80 to the minute; but very irregular. At periods she was allowed to come out from digitalis. After some three months, the patient was allowed out of bed and gradually increased the amount of exertion. The pulse and its adjustment to exertion being used as an indication for an increase. At discharge the patient could go about the hospital, avoiding stairs, and using as her limitation, the first signs of fatigue. When such appeared, she would go to bed. Soon she became acquainted with the amount of exertion necessary to produce fatigue, and remained within her limits.

How do these drugs produce results? Santeson in 1893 and Hofman in 1915 have shown that quinidine decreased the irritability contractility and rhythmicity of the heart. Due to this action we get a gradual reduction of rate and a returned, normal rhythm.

Lewis believes that quinidine effects both the refractory periods and the conduction time of the circus wave and that if the gap between the crest and wake of the reentrant wave is narrowed and finally closed, fibrillation will cease, and the pacemaker again gain control. Digitalis is the most valuable drug in heart disease. Indications for its use are:

1. Heart failure of congestive type.

2. Auricular fibrillation or auricular flutter with rapid ventricular rate, whether or not muscle failure is present. Digitalis acts in two ways:

First: By depressing conductivity thereby reducing ventricular rate by producing block.

Second: It increases the force of muscular contraction. This action is present in diseased, as well as normal muscle. Also with normal rhythm or pathologic rhythm.

In conclusion: (1) Rest, both mental and physical must be obtained. (2) Morphia is always indicated to produce sleep and relaxation—thereby improving rest.

(3) Appropriate and suitable diet to maintain nutrition and relieve the heart of the burden of carrying on digestion.

(4) Relieve edema and congestion by free catharsis and diuresis.

(5) Two cases of auricular fibrillation reported to emphasize methods of administering quinidine sulphate and digitalis and the results to be desired.

(6) Definite indications exist for the use of digitalis and quinidine and neither drug should be given indiscriminately.

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Discussion: C. J. FISHMAN, M.D.

Dr. Bryan discussed very nicely the management of auricular fibrillation, but as I read his article and listened to him this afternoon I wondered whether the general practitioner understood the meaning of the term auricular fibrillation, and I will take this opportunity of explaining it briefly.

Auricular fibrillation is a type of cardiac irregularity which is not usually primary, but associated with and based upon heart muscle fatigue. It occurs, therefore, in weak hearts and produces a type of irregularity which has no relation to respiration, or to the beats one with another. It may be described as an irregular irregularity and is seen in the so-called "Wild Hearts" in general practice. We have beats which are disassociated as to rhythm. It is distinct from other types of irregularity which may be briefly mentioned as follows:

First, the sinus arrhythmia, which is the most common irregularity in young people, depending upon the respiratory movements, due to alteration of the tone of the vagus nerve. It may be considered a normal youthful type of irregularity, resulting in more rapid beats during inspiration, and slow beats during expiration.

Second, the extra systoles may be described as a disturbance of the sequence of rhythm, in which the auricle contracts too early and often, resulting in misbeats or early contractions. It is a very common type of irregularity in the aged, and is generally not serious unless associated with organic heart disease.

Third, heart block is a type of irregularity in which there is an abnormal mechanism manifested by absence of ventricular contractions, resulting in an abnormally slow heart, most often just one-half the normal rate.

Fourth, paroxysmal tachycardia, on the

other hand, produces a heart rate which, although regular, is very rapid, usually twice the normal rate. Attacks of paroxysmal tachycardia appear suddenly, last for a short period of time, and disappear suddenly. The heart between the attacks is perfectly normal, and the heart muscle usually uninjured.

Fifth, auricular flutter occurs in a heart in which the auricles beat very rapidly, often as high as 250 to 350 per minute, while the ventricles may beat normally. This type is sometimes overlooked clinically, but may be recognized accurately by special apparatus, such as the electrocardiograph.

The three important measures in the management of auricular fibrillation should be emphasized over and over again. The first and most important being a rest, as was so well brought out by Dr. Bryan in his article. The use of digitalis in primary weak hearts acts efficiently and satisfactorily in a certain number of cases. The result is frequently a different type of irregularity, namely, the extra systoles. Quinidine in a certain percentage of the cases acts specifically in settling the cardiac mechanism. I believe, of all measures, rest in bed, by all means, is the most important.

I believe that this is a most timely presentation, and I am glad to have had the opportunity of reading and hearing Dr. Bryan's article.

THE TREATMENT OF DIABETES*

ALEXANDER B. LEEDS, A.B., M.D., F.A.C.P.
CHICKASHA

A rational and satisfactory treatment for diabetes has been developed as a result of the advance made during the last ten years in the problem of this disease.

Diabetes may be due to a disorder of the function of the islets of Langerhans, with a deficiency of their internal secretion, yet it may develop as a result of the fatigue of the islets from an over ingestion of sugars or there may be an inherent weakness of the pancreas itself.

We must not forget that any of a variety of organic lesions, such as the possibility of syphilis, can be the contributing etiology of this disease.

In the treatment of diabetes, the ideal is to keep the blood sugar low; the urine free from sugar and to furnish a diet at once palatable and yet sufficient for the patient's need whatever his station or occupation in life may be.

Read before Section on General Medicine, Neurology, Pathology and Bacteriology, Annual Meeting Oklahoma State Medical Association, Oklahoma City, May 13, 14, 15, 1924.

The management of this treatment should be so simplified that the patient is not forced to spend too much of his time trying to live within his carbohydrate tolerance.

We are all agreed that in nearly all cases of mild diabetes, if the disease is uncomplicated, there is a high sugar tolerance and for this reason these patients do well for years on a reasonable diet and we feel that they should be encouraged to depend upon a real rational diet as long as it is sufficient.

Before starting any diabetic treatment, it is imperative that we discover and eliminate any source of infection in every case of diabetes.

Another suggestion is that in many cases of diabetes, in older or aged persons, there is an exhaustion of the suprarenal glands probably caused by or resulting from the effects of worry, high tension of living or other things peculiar to persons of older years.

As this exhaustion of the suprarenal glands either causes the diabetes or is associated with this condition, it is necessary that this exhaustion of the suprarenal glands be corrected, if possible, either before beginning the active treatment of the diabetes or while this active treatment is being inaugurated.

We recognize that there are two great classes of diabetic patients—those to whom insulin is a necessity and others to whom it is a luxury and as a matter of fact is not needed by this second class.

There is a comparatively small number to whom insulin is a necessity as these do not represent more than one third of the cases of diabetes seen.

Generally speeking, insulin should be given in all cases of diabetes occurring in chlidren and in persons under forty years of age; in all cases of diabetic coma and severe acidosis; in all cases with an infectious process which has caused either a temporary or a permanent lowering of the sugar tolerance; in all cases of proven severity in which there is a necessity for a surgical operation and more especially in the cases in which the sugar tolerance, as determined by adequate dietetic control, is so low as to make efficient living impossible.

The diet in diabetes is one in which the carbohydrates, proteins and fats as well as their quantity is determined on the basis of the body weight of the patient; the severity of the disease, the activity of the patient and the amount of insulin administered if it is necessary for its use in that particular case.

Only from a basal requirement or minimum adequate diet can a rational diet be elaborated for each individual patient so this minimum adequate diet is the prerequisite for any

satisfactory treatment.

The determination of this minimum adequate diet as well as the determination of the patient's sugar tolerance can be ascertained by careful dieting; frequent blood sugar estimations and the administration of insulin, in suitable doses, if the careful dieting does not suffice.

We use either the method of preliminary starvation until the urine is sugar free then gradually increase the carbohydrates, proteins and fats until sugar or acetone appears in the urine or dispense with the period of starvation and begin with a very limited diet until sugar disappears from the urine then gradually increase the carbohydrates, proteins and fats until sugar or acetone appears in the urine.

If either the starvation or limited diet fails to remove enough of the sugar from the urine so that there is still any appreciable quantity found then insulin, in small guarded doses, should be given until the urine is sugar free then gradually increase the carbohydrates, proteins and fats until a sufficient and efficient diet has been approximated.

In the use of insulin, the ideal is to keep the blood sugar within normal limits if that patient is to continue to progress satisfactorily.

The use of insulin does not and can not, in any way, replace dietary management nor does it promise a cure but it does improve the mental and physical state of all patients with diabetes who are taking it so that its administration is justified in all casse where a rational diet does not suffice.

The clinical improvement, by the use of insulin, is so striking that patients are more willing to restrict their diet than they were before beginning the use of insulin.

The action of insulin consists not only in enabling the patient to utilize the carbohydrates in the food but it also affords rest to the islet cells in the pancreas.

The more severe the case of diabetes, the more necessary is the use of insulin and the safer is its administration.

One unit of insulin will disassociate or burn two grams of glucose and it is given in quantity sufficient to enable the patient to utilize the diet.

Preferably one dose of insulin is given in the morning and one dose is given in the evening and when the diet is being increased, each step in the increase should be continued for three days before estimating the blood sugar again.

As a general rule, in cases of diabetic coma or severe acidosis insulin should be given in dosage of twenty units and this size dose can be or should be repeated every two or three hours until results are obtained.

In minor ailments, before operation, diabetic patients should go to bed; the diet should be reduced one-third in amount and five units of insulin given or added to the usual dose if the patient has been taking insulin regularly; for we know that insulin has proven to be of great value in tiding the diabetic patient over the risk of an operation requiring a general anesthetic.

Insulin acts favorably on cases of diabetes complicated by tuberculosis so this complication is not a contra-indication for its use.

Diabetic neuritis is sometimes cured by dietetic treatment; use of insulin, if necessary, and eliminating all forms of alcohol.

Local application of the liquid, produced by rubbing together in a mortar equal parts of chloral hydrate and camphor, may relieve the pain of diabetic neuritis.

Metabolin, which is made from the pancreas and yeast, apparently has a similar action to that of insulin and as it is rapidly absorbed when placed in the rectum, it is being consistently tried out in this manner.

We need not emphasize the importance of the report which has been made that a weak alcoholic preparation of the pancreatic enzyme insulin should protect it from disintegration by the gastric juice.

The possibilities of the promise of this advance in the preparation and use of this form is very encouraging for the future.

In conclusion, after the determination of the proper efficient diet, with or without the sufficient dose of insulin, if needed, the patient should be taught how to figure out his needed diet; how to test his urine for sugar accurately; how to administer the hypodermic injection doses of insulin if he is to take insulin; how to recognize the symptoms of too low blood sugar (such as weakness, sweating, tremor, nervous apprehension and disorders of speech) and told that if any of these symptoms appear there should be taken internally, at once, some orange juice, some sugar or some glucose solution. If these symptoms become intensified or serious then two to four lumps of sugar by mouth or one to four cc. pituitrin or fifteen minims of adrenlin 1:1000 subcutaneously are urgently required.

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Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal, the manuscript will be returned to the writer.

Failure to receive the Journal should call for immediate notification of the editor, 508 Barnes Building, Muskogee, Oklahoma.

Local news of possible interest to the medical profession notes on removals, changes in address, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application. It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

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EDITORIAL

ABRAM'S FIASCO ENDED

Abrams diagnostic cure-all has been, after most exhaustive investigation, a time wasting process utterly unwarranted, had any honest, well-balanced scientific electrical or medical authority conversant with phases of electro-medical principles, been consulted; declared by the *Scientific American* to be "utterly without foundation in science" for the diagnosis and treatment of disease. "The so-called electronic reactions of Abrams do not exist," says this committee of scientific non-medical experts. As we have noted heretofore, verdict from unbiased, qualified authority, with no possible attachment, unopen to charges of bias or self interest always heaped on medical authority, regardless of merit and worth, cannot possibly attach to this final report, which disposes for all time the claims of the charlatan advanced in support of this monumental fake. Once again we see passing from the stage of hysterical publicity and dishonesty, a fake which tomorrow will be forgotten, which will give place to something equally impossible, unscientific, a creation merely to impose, for the fleeting moment, upon the credulous and unfortunate, but just as surely as this heartless fake had, a certain element among the so-called "medical profession." Throughout Oklahoma there sprung up overnight members of our medical profession, in every case those generally known to the rank and file of their associates as woefully unqualified and unfitted to assume the place of worth or respect, but unfortunately accepted by the victim of disease by reason of their recognition by the laws of Oklahoma as persons of honor and worth; new prophets, offering hope to those known to be hopeless. It is significant that in many of these instances the "expert medical authority" had previously been engaged in acts of charlatanism, advertisers and "fly-by-nights" were the rule. Though it is regrettable, though we know that their acts are those of heartless imposition upon the ignorant, helpless unfortunates upon whom they always prey; individual or collective protest from the medical profession is almost useless. For that reason investigations from such authorities as the *Scientific American* are of inestimable benefit. No charge of ulterior motive will stand. Now, as we have the final verdict there is no reason why every practitioner, advertiser, quack or culturist operating this device to the injury of the helpless may not be prosecuted just as any other fraudulent operator may be brought to justice. Oklahoma City, Muskogee, Tulsa, Shawnee and other centers house the criminal fakirs in this field. Their activities should end at once. In the meantime we should prepare for the next onslaught born of dishonesty.

Editorial Notes—Personal and General

DR. A. V. EMERSON, Tulsa, is attending the New York and Chicago clinics.

DR. H. L. ROBERTS and family, Davidson, visited Missouri relatives in August.

DR. WILLIAM PATTON FITE, and family, Muskogee, are visiting Colorado points.

DR. D. LONG, Duncan, has been appointed Health Officer for Stephens County.

DR. M. K. THOMPSON and family, Muskogee, motored to Colorado, early in August.

OKLAHOMA COUNTY MEDICAL ASSOCIATION will resume meetings on September 27.

DR. and MRS. LEWIS GADDY, Stratford, have returned from a month's vacation spent in California.

DR. and MRS. SHADE D. NEELY, Muskogee, visited old home folks in Mississippi August-September.

CANADIAN COUNTY Commissioners extended their budget for 1924-25 to include employment of a public health nurse.

DR. FLOYD E. WARTERFIELD, Muskogee, motored to the Denver meeting of the American Urological Assn., August 21-25.

OKLAHOMA CITY CLINIC is building a new structure to house the clinic, opposite the Wesley Hospital, costing about $50,000.

DR. EARL M. WOODSON, Poteau, was married to Miss Faye Scott of Atoka, at Tulsa, on July 5th, 1924, and have made their home at Poteau.

DR. S. N. CHATTERJEE, Muskogee, Captain, Medical O. R. C., attended the Army Medical School at Fitzsimmons Hospital, Denver, August 1 to 16.

DRS. GENERAL PINNEL, G. A. DETAR, M. M. DEARMAN and GEO. W. COLVERT, Miami, were recently posted "A. W. O. L."; cause, a fishing trip; result, chiggers and sun burn, no fish of pathologic extent.

McINTOSH COUNTY MEDICAL SOCIETY met August 12, with the following program: "Osteo Myelitis," Dr. L. I. Jacobs; "Diarrhoea and Dysentery," Dr. G. W. West, with a general discussion, and clinic, and report of cases.

DR. ERNEST BALL, formerly an Oklahoman, infected with "wanderlust," located, for years at Ebano, S. L. P., Mexico, motored back to his first love in July-August. He threatens to demonstrate normalcy by returning and locating in Oklahoma at an early date.

ARDMORE recently had a children's clinic, under the auspices of the Rotary Club, conducted by Drs. Earl D. McBride and A. M. Young, Oklahoma City, assisted by a number of local physicians and surgeons. Sixty-three patients were examined and the proper recommendations made.

MEDICAL OFFICERS RESERVE CORPS. Among some of those attending the course at Fort Sill, August 17-31, were the following: Col. L. C. Willour, McAlester; Lt. Col. F. H. McGregor, Mangum; Lt. Col. P. P. Nesbitt, Muskogee; Major W. W. D. Akers, Hooker; Major Carl Puckett, Oklahoma City; Major O. E. Templin, Alva; Major L. A. Mitchell, Frederick; Capt. D. Armstrong, Durant; Captain A. L. Mobley, Eufaula; Captain C. E. Parker, Dustin; Lieut. J. C. Schlicht, North McAlester; Major C. W. Heitzman, Muskogee.

DR. and MRS. WILLIAM L. KENDALL, Enid, are spending a vacation in Colorado.

DR. and MRS. H. T. BALLANTINE, Muskogee, have returned from Northwestern Pacific points.

DR. C. D. DALE, Caddo, has received the appointment as County Health Officer for Bryan County.

DR. GEORGE W. COLVERT, Miami, has been appointed city physician there, succeeding Dr. J. B. Lightfoot.

DR. EARL YEAKEL, and family, Shawnee, are removing to Oklahoma City, where Dr. Yeakel will establish his practice.

DR. C. M. FULLENWIDER, and family, Muskogee, motored to Colorado (with special reference to Gunnison trout) in August.

DR. FRED G. PRIESTLY, Frederick, returned recently from Chicago where he has spent ten weeks taking a post graduate course.

MAJOR WILLIAM H. BAILEY, Med. O. R. C., Oklahoma City, has returned from active duty at the U. S. Army Fitzsimons General Hospital, Denver.

DR. and MRS. I. C. MORRIS, Shidler, are visiting at Rochester, Minn., where Mrs. Morris is undergoing treatment, and the Doctor taking a post-graduate course.

DR. G. F. WOODRING, Bartlesville Health officer, is "peeved" over three cases of typhoid fever for July. He insists that any cases are too many cases and wants none hereafter.

DR. and MRS. J. I. HOLLINGSWORTH, Muskogee, left August 25 for San Francisco, where they embarked on the 30th for Del Carmen, Pampanga Province, Phillipine Islands, the doctor having accepted assignment with the Spreckels Company hospital.

DR. W. F. LUNSFORD, Poteau, has been appointed full time county health officer of LeFlore County, under the Rockefeller Foundation plan, and is spending a month at Andalusia, Ala., in observation of the health unit there, which is regarded as one of the most efficient in the country.

THE MEDICAL DETACHMENT, 180th Inf. Okla. N. G., attended the National Guard encampment at Fort Sill, under the command of the following officers: Major Andrew W. Harris, Muskogee, Captain Ralph E. Jones, Stigler, Captain John Davis, Stigler, and Captain Charles C. Rose, Atoka, all of the Medical Department.

UNIVERSITY MEDICAL COLLEGE ALUMNI, Kansas City, Missouri, will hold a reunion banquet, Wednesday, October 15, 1924, 6:30 P. M., in the Banquet room of the Kansas City Athletic Club, 11th and Baltimore, Kansas City, Missouri.

During the noon hour of the same day the various classes from 1882 to 1913 inclusive will hold individual class reunion luncheons.

The reunion banquet is a part of the program of the Kansas City Clinical Society, which will convene in Convention Hall, Kansas City, Missouri, October 13-18, 1924.

JEFFERSON MEDICAL COLLEGE. In recognition of the far reaching developments of bronchoscopy in the diagnosis and treatment of diseases of the lungs and of esophagoscopy and gastroscopy in the diagnosis and treatment of diseases of the esophagus and stomach, the Board of Trustees and Faculty of The Jefferson Medical College have created a new Chair to be known as the Department of Bronchoscopy and Esophagoscopy. Dr. Chevalier Jackson, formerly Professor of Laryngology in the Jefferent has been elected to the Professorship of the new Department. Dr. Fielding O. Lewis has been elected to fill the Chair of Laryngology vacated by Dr. Jackson.

STATE BOARD LABORATORY—under the reorganization of the Department of Public Health of the State of Oklahoma, Henry C. Ricks, M.D., an experienced medical director, is in charge of the State Laboratory and is prepared to serve the State thru the medical profession in the examination of all specimens pertaining to public health, along the lines of communicable disease. Tests which strictly belong to the private practice of medicine will not be undertaken as they belong to the commercial laboratories.

Dr. Ricks will in the near future issue a pamphlet describing in detail the functions of the Laboratory which will be sent to all physicians in the State.

DOCTOR EDGAR J. ORVIS

A good and useful citizen, whose demise will be felt by many, passed away on August 21st, suffering from valvular heart trouble, with which he had been afflicted for several years. Dr. Orvis, a prominent physician and resident of Blackwell, where he had lived for twenty years, was beloved by all of his colleagues and his friends. He was born at Oakfield, Wisconsin, on August 13, 1854, and received his early schooling there, and at the Toronto University, and graduated in medicine from the University of New York in 1894. Dr. Orvis began the practice of medicine in Wisconsin in 1899 and remained there until his removal in 1901 to Oklahoma. Surviving Dr. Orvis, are his widow, a son, two daughters and two stepsons. The funeral was held from his home under the auspices of Chickasha Lodge No. 109, A. F. and A. M. of which lodge he was a member, as well as of his county and state medical associations.

DOCTOR WALTER W. ROSSER

Dr. W. W. Rosser, Member of the Staff of U. S. Veterans Hospital, Number 90, Muskogee and tuberculosis expert for that institution died suddenly at Stevenson, Alabama, August 15. The cause of death was heart disease from which he had had premonitory warnings for some time, but by conserving his energies and restrictions he had succeeded, probably in deferring the final end for some time. Dr. Rosser was highly respected for his sterling ability by those acquainted with his capacity in his special field and for his many likable social endowments. He is survived by his widow Mrs. Macie Rosser.

Born at Stevenson, Alabama, May 19, 1876, his life was a very busy one. After graduating from Vanderbilt Medical Department in 1898 he served the DeBeers Diamond Mines Hospital in South Africa as house surgeon, later the Rand Mines at Johannesburg after which he served with the British Army for three years as contract surgeon. It was during this latter service that he acquired exceptional ability as a tuberculosis specialist. His active service with the United States Army began in January 1918, his service including that of the German occupation from which he retired with the rank of Major. He also saw service in China during the Boxer rebellion. He has been with the Public Health Service since his army discharge. The following resolutions were adopted by his associates:

RESOLUTIONS

Adopted by the Clinical Society of The United States Veterans Hospital, Number 90, Muskogee, Oklahoma, on the death of Doctor Walter W. Rosser.

Whereas; death has called from our midst our honored and respected member, Walter W. Rosser, and,

Whereas, the passing of Dr. Rosser leaves an irreparable void and a feeling of sincere regret and sadness in the hearts of the patients, personnel and staff of the Veterans Hospital, and,

Whereas, during his connection with the United States Public Health Service, the Army, and the Veterans Bureau, he demonstrated his superior worth and ability, at all times radiating kindness, hope and cheerfulness among his associates, to such extent that his untimely passing to the Great Beyond has produced feelings not possibly describable in mere words:

Therefore, Be It Resolved: That the Clinical Society of Veterans Hospital Number 90 record their feelings of sadness, regret and profound respect upon his unfortunate demise; that his death be entered upon our official records as a distinct loss to society, the medical profession, War Veterans and the many friends who deemed it a privilege to know him.

Be it further Resolved: That copies of this be sent to his bereaved family, to the Alabama State Medical Association, of which he was a member and to the Oklahoma State Medical Association.

Roy A. Wolford
Chas. P. Murphy
Claude A. Thompson
Committee, The Clinical Society of U. S. Veterans Bureau Hospital Number 90, Muskogee, Oklahoma.

DOCTOR JOHN S. HARTFORD

Dr. J. S. Hartford, Oklahoma City, died after a short illness due to apoplexy, August 28th.

Dr. Hartford was born at Cameron, Mo., July 19, 1874. Educated in the schools of Chillicothe and Missouri Wesleyan College, after which he was graduated in Medicine from the Kansas City Medical College, March 1901. After practicing a short time in Kansas City he located at Colony, Oklahoma, moving from there to Oklahoma City in 1908. He rapidly established a large practice in Oklahoma City, becoming one of the leaders in the profession and in his special work—gynecology—also occupying the chair of Gynecology in the University Medical School, member of University Hospital and St. Anthony's staffs, and a consistent member of his county, state and national medical organizations in addition to many others. Dr. Hartford is survived by a widow, two sons and one daughter. Funeral services were conducted at the First Christian Church, Oklahoma City; interment was made in Rose Hill Cemetery. The following resolutions were adopted by his associates in medicine.

The faculty of the School of Medicine of the University of Oklahoma, in session today, called together by Dean LeRoy Long, because of the death of a fellow member, Dr. John Hartford, wish first to extend to the family its heartfelt sympathy; second, to express the loss felt by this Faculty in losing such a beloved and valuable member.

We who were in daily association with Dr. Hartford know he was an upright citizen, a capable and conscientious physician and a Christian gentleman. Our minds being only finite, we cannot understand the infinite wisdom of God in taking away a good man who would seem to have, in the natural course of nature, many years of usefulness before him. However, He knows best.

By resolution adopted in Faculty meeting, the Secretary is directed to spread this memorandum upon the minutes of the Faculty, to send a copy to the press and to the bereaved family.

Committee for the Faculty,
Dr. Antonio D. Young,
Dr. Samuel R. Cunningham,
Dr. Everett S. Lain.

ACADEMY OF MEDICINE OKLAHOMA CITY

Resolutions

"We live in deeds, not years; in thoughts, not breaths; in feelings, not in figures on a dial. We should count time by heart throbs. He most lives who thinks most, feels the noblest, acts the best. Life's but a means unto an end; that end: Beginning, mean, and end to all things—God.

—Philip James Bailey.

WHEREAS death has called from among our membership our much loved and honored member, John S. Hartford, and

WHEREAS, the loss to the Academy of Medicine and to the profession generally of Oklahoma City and the State seems most untimely and is keenly felt, without the realization of the full value of a service which has been taken from our midst—we resign ourselves

Dr. Hartford's membership in the Academy of Medicine contributed most generously to the interest and the advancement of the organization; and, its membership can not but surely feel and eventually realize the loss of his personal influence, and the sudden termination of his contributions to our profession in the course of the Academy's accomplishments to the benefit of Medical Science.

Therefore, Be It Resolved: By this Academy of Medicine that his loss in our Membership, and in our community, is most keenly and sincerely felt and that the grief and sorrow at his departure is an individual feeling of loss to the entire membership of the Academy; and, in which grief and sorrow, this organization extends words of condolence to his immediate family in this bereavement.

Be It Further Resolved; that a copy of this resolution be placed in the records and proceedings of the Academy; that a copy be given the public press and that a copy be delivered to the sorrowing family of our deceased brother.

(Signed)
R. E. Looney
Arthur W. White
C. B. Taylor
Committee, Oklahoma City Academy of Medicine.

OBSTETRICS and PEDIATRICS

Edited by Carrol M. Pounders, M. D.
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REPORT TO THE HOUSE OF DELEGATES BY COMMITTEE APPOINTED BY THE BOARD OF TRUSTEES ON ACCIDENTS FROM STEARATE OF ZINC DUSTING POWDERS. —American Medical Association.

Twelve cases of the accidental inspiration of zinc stearate dusting powders were reported by Heiman in 1922. One patient died within twenty-four hours. Three developed signs of bronchial pneumonia, with symptoms of acute toxemia, lasting from two to three weeks, but ultimately recovered. In the remaining eight cases, partial asphyxia was followed by gradual recovery without definite involvement of the lungs.

In response to a request for reports of accidents from stearate of zinc dusting powders, published in The Journal, Feb. 9, 1924, thirty-four cases have been reported, five of which terminated fatally. Eleven reports did not state the date of the accident. Of the remaining cases, eleven have occurred since January 1 of the current year, and all have occurred since April 9, 1919. The youngest patient was three months

old, and the oldest two years. In seven of the cases, somewhat more than one quarter of the total number in which the age was stated, the victims were six months old. The youngest victim was a three months' old baby, to whom a can of the dusting powder had been given as a plaything, and who died in one hour. Accidents most commonly resulted from the sifting out of powder from the can in the hands of the infant, with consequent inhalation, but in some cases the infant is reported as having put the container to his mouth. In one case the lid came off accidentally. In another, and older child threw some of the powder into the infant's face.

The symptoms were in all cases immediate, the severity depending on the amount inhaled and the amount lodged in the mouth and nostrils. In typical cases there were asphyxia and evidence of collapse. The persistent collapse seemed strongly suggestive of a toxic effect, possibly a zinc (ZN) poisoning. Pneumonia followed in some cases. In one case, the patient being an infant three months old, death occurred in one hour. In the several cases in which recovery took place it was usually complete in about two weeks. It may not be amiss to mention that powders which require relatively large sifting holes for convenient use are much more potent for harm than those of smaller size, and all cans brought to our attention which contained zinc stearate alone or a large proportion of zinc stearate required the large holes.

Conclusions

Your committee can find no scientifically controlled evidence to justify the statement that zinc stearate powders as used in the nursery possess any advantage over other well known powders, such as talc and powders of mixed composition.

The committee is of the opinion that for the protection of the public, zinc stearate powders and powders containing zinc stearate, for toilet and nursery use, should be sold only in containers with permanently attached covers. The shape of the cover should be such as to render it impracticable for an infant to place the top in his mouth. The cover should be kept automatically and positively closed whenever the container is not in use; for instance, by a slide or valve closing the holes at all times, except when operated by firm pressure by the hand of the person using it, the slide or valve being held in position by a spring sufficiently strong that an infant cannot operate it. Conspicuous, clearly-worded caution labels should be placed on all containers of stearate of zinc dusting powders for toilet or nursery use, warning users to keep such containers out of reach of infants and children.

Recommendations

Your committee recommends that the Board of Trustees be authorized to continue the work begun by it to induce manufacturers and packers of stearate of zinc dusting powders to market them in safe, properly labeled containers, as described above, or in some equally well safeguarded container, and to educate the public with respect to the danger inherent in such powders; and that the board be authorized further, if in its judgment it becomes necessary, to seek federal and state legislation to insure the marketing of such powders in the manner described.

THE THERAPEUTIC VALUE OF THE BACTERIOPHAGE IN TREATMENT OF BACILLARY DYSENTERY.—Ralph C. Spence and Earl B. McKinley, Southern Medical Journal, August, 1924.

The authors review the literature on the clinical application of the bacteriophage. They report four cases of chronic suppurative wounds treated by local application of the bacteriophage with good results. The infection was due to the staphylococcus aureus in each case. A case of pyelitis having the staphylococcus aureus as the etiological factor cleared up promptly after the injection, at three day intervals, of four doses of the bacteriophage in amounts of eight mils each. A streptococcus abscess of the lung was successfully treated locally—after rib resection. A case of chronic dysentery due to bacillus dysenteria Flexner was treated with excellent results.

Twenty cases of dysentery in children ranging in age from four months ot six years were treated—the bacillus dysentery having been isolated from each case. They were put on a protein diet and given ten mils of the bacteriophage three times daily. In those cases where a second stool examination was made the bacteriophage was found to be present and the dysentery organisms were not found. The average duration of the disease before treatment was begun was 3.1 days. The average minimum number of stools per 24 hours was 20.2—the most of which contained blood and mucus. Of the series, 18 recovered and two died—a mortality of ten per cent. Of the cases that recovered the average time between the beginning of treatment and complete recovery was 5.8 days. There were no recurrences. The appetite became normal when the symptoms subsided.

Contrasted with this series was a series of twelve cases treated in the hospital (the preceding series were private cases) during the same month and during the same epidemic. The treatment here consisted of protein milk, skimmed milk and barley water, bismuth, sodium bicarbonate, hypodermoclysis, intraperitoneal injections of glucose and normal salt solution and colonic irrigations. The ages here varied from twelve months to two years. Five of these cases died—a mortality of 40 per cent. Of those that recovered, the average time between admission to the hospital and complete recovery was 12.8 days.

The conclusions are:

(1) The therapeutic use of the bacteriophage in the treatment of acute bacillary dysentery in children will greatly lower the mortality. (2) The earlier in the course of the disease the treatment is begun the better are the chances for an early recovery. (3) In those cases which recover —the treatment with the bacteriophage will greatly shorten the duration of the disease.

THE EFFECT OF FLUID ON THE TEMPERATURE AND BLOOD CONCENTRATION IN THE NEW-BORN WITH FEVER.—H. Bakwin, M.D.; R. M. Morris, M.D. and J. D. Southworth, M.D., Amer. Journal Diseases of Children, June, 1924.

It has been previously shown that a close relationship exists between fever in the new-born and dehydration. Also in afebrile new-born infants the protein concentration of the blood is fairly constant—being around six and seven per cent—in those with fever it is usually above 7.5 per cent and often as high as 9 per cent.

The writers studied the effect of fluid therapy on the temperature and blood concentration of the new-born with fever. Approximately 35 c.c. of the fluid per kilogram of body weight warmed above the temperature of the baby, were given and the temperature and blood concentration determined repeatedly before and after the fluid administration. The fluid was given orally (gavage), hypodermically and intraperitoneally. Tap

water, saline and glucose solutions were used. The babies were kept well covered during the experiments to avoid a fall in temperature due to cooling of the body surface.

In cases where fluid was given by mouth (by gavage) a prompt fall in temperature and blood concentration followed with great regularity. The temperature usually became normal within an hour. The drop in serum protein concentration usually amounted to about 1 per cent. The fall in the red cell count was prompt. Plain water and 5 per cent glucose were used with equally good results. When fluid was given hypodermically or intraperitoneally (30 to 60 c.c. per kilogram) the effect on the temperature and blood concentration was neither so marked or so prompt as after gavage, and occurred much less regularly. Usually a gradual drop of temperature from 0.5 to 1 degree c. in two hours occurred. The drop in the serum protein concentration rarely amounted to over 0.5 percent. of protein. In only three of sixteen babies studied after fluids was given by these routes did the temperature reach normal during the period of observation, which usually lasted about two hours after the fluid was given.

Infants with fever due to various infections were given water by gavage. There was only a slight fall in temperature and the plasma dilution was not so marked.

These experiments emphasize the greater efficiency of the oral administration over the subcutaneous or intraperitoneal in reducing the concentration of the blood and lowering the temperature in the new-born with dehydration. Similar results have been obtained in older infants dehydrated as a result of severe diarrhea. In these cases water or 5 percent glucose solution was dripped into the stomach at a slow rate by means of a tube inserted into the stomach through the nose.

TUBERCULOSIS

Edited by L. J. Moorman, M. D.
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STUDIES ON THE RESPIRATORY ORGANS IN HEALTH AND DISEASE.—6. The Significance of the Vital Capacity Test in Pulmonary Tuberculosis, Bronchial Asthma, Pneumonia and an Acute Infection Outside the Respiratory Tract. J. A. Myers, Ph.D., M.D. The Archives of Internal Medicine, November, 1922.

In this study vital capacity readings were taken in 335 cases of suspected tuberculosis. Stereoscopic plates were made in 210 cases. The cases were classified both on a basis of physical findings and on a basis of X-ray examination. In the majority of cases the vital capacity was found to be decreased in proportion to the extent of involvement as revealed by both physical signs and the X-ray.

Pulmonary cavities were diagnosed by X-ray in thirty cases. The average vital capacity for this group was sixty-four, the range thirty-one to one hundred nine percent of the normal. The nine cases having a spontaneous or artificial pneumothorax all showed a reduction of approximately fifty percent.

Twenty cases of bronchial asthma were studied. The vital capacity was found greatly reduced during acute attacks but returned to normal when the attacks subsided in all cases except four with emphysema and three beyond the age of fifty.

Observations were made on twenty pneumonia patients. The lowest reading was seventeen per cent, this was taken on the fifth and sixth days of disease. The highest reading was ninety-three in another case at discharge. The lowest readings were obtained at the time of the crises. Very little relation was found between the extent of involvement of lung tissue and the reduction of vital capacity.

This test is a valuable aid in the early diagnosis of pneumonia as it probably reduces the vital capacity more from the beginning than any other acute respiratory disease. It also gives much information as regards the clearing up of the lesion and is of great value in guiding the patients' activities. They should remain quiet until it is at least ninety percent. An unresolved condition or complication is shown by a failure of the vital capacity to gradually increase.

Readings were made on sixty patients suffering from paratyphoid fever. Only fifteen percent of these patients were found to have vital capacities below normal limits. Fifty percent of these cases had such complications as pleurisy or lung involvement. The chief value of the test in this non-respiratory infection was found to be in suggesting such complications.

STUDIES ON THE RESPIRATORY ORGANS IN HEALTH AND DISEASE. 4.A Comparison of Vital Capacity Readings and X-Ray Findings in Pulmonary Tuberculosis.—J. A. Myers, Ph.D., M.D. The American Review of Tuberculosis. January 1922.

The spirometer was invented by John Hutchinson in 1846. He took readings on some 2000 men and established a normal lung capacity for men of a given age and size, his object being to contribute a method of detecting disease. He made a comparison of the vital capacity of healthy men with that of diseased men of the same age and size. His results were similar to those obtained today.

Garvin, Lundsgaard and Van Slyke in 1918, and Dreyer and Burrell in 1920 all find the vital capacity materially decreased as a result of pulmonary tuberculosis.

Myers presents here a study on a series of 101 cases appearing for examination because of definite symptoms, known exposure, or previous diagnosis of pulmonary tuberculosis. In each case a careful history was taken and a physical examination of the lungs made. While he feels that the number of cases is too small to justify the drawing of final conclusions he considers the vital capacity test a valuable aid in the diagnosis of active pulmonary tuberculosis.

A reduction of fifteen percent is usually of clinical significance. As other pulmonary and cardiac diseases may cause such a decrease, x-ray plates and further examinations and tests must be employed. As there is considerable individual variation in normal lung capacity due to occupation, mode of living and past physical training, spirometer readings are most valuable in a person whose normal capacity has been established when in good health. Otherwise, the reading might appear normal and still be reduced several hundred cubic centimeters. The vital capacity test is especially useful in determining the severity of the lesion as a very small severe lesion may reduce the lung capacity in one case more than a low grade extensive lesion in another case. Its

most valuable service, however, is in following the course of disease after the diagnosis has been made. This instrument registers an increase in lung capacity as the disease comes under control, and a decrease in those cases growing progressively worse. The spirometer measures the ability and power of the lungs to function, while the X-ray records the nature and extent of the disease.

THE MANAGEMENT OF THE TUBERCULOUS PATIENT.—J. A. Myers, Ph.D., M.D. The Journal-Lancet, December 1, 1922.

All cases of active pulmonary tuberculosis should be sent to a sanatorium if at all possible. While good results may be obtained from home treatment it is very difficult as it is hard to educate both family and patient and to obtain their co-operation. Much time should be spent during the period of rest in the education of the patient as this is one of the most important factors in his treatment.

Heliotherapy is of great value in selected cases but must always be carefully prescribed and regulated and used always in connection with rest.

Excellent results may be obtained from artificial pneumo-thorax in those cases to which it is suited. It usually makes the prognosis about fifty per cent more favorable.

Postural rest is used successfully in many cases unsuited to pneumo-thorax.

Rest and posture are most important in the treatment of pulmonary hemorrhage. Artificial pneumo-thorax is often used with good results in otherwise uncontrollable hemorrhages.

TEACHING NORMAL CHEST FINDINGS TO MEDICAL STUDENTS.—J. A. Myers, Ph.D., M.D. The American Review of Tuberculosis, October, 1923.

The course in the normal chest was first offered at the University of Minnesota during the fall of 1921. This course was organized because there appeared a real need for a course covering the findings in the normal living chest to bridge the gap between the laboratory and the clinical subjects. This need was clearly shown by many junior and senior medical students and recent graduates expressing themselves as being rarely certain of their chest findings, especially the lungs.

The work consists of a brief review of the anatomy and physiology of the chest, physical examination (inspection, palpation, percussion and auscultation) functional tests and x-ray findings in the normal chest, also examination of the chests of obese and senile individuals and children.

The final examination consists of the examination by the student of a patient with definite pulmonary disease and the report of any deviation from the normal that he has detected.

While the students at first do not know how to interpret their abnormal findings, they do know that such findings do not exist in normal lungs and from this point soon and easily learn differential diagnosis.

BACTERIOLOGY and PATHOLOGY

Edited by Wm. H. Bailey, A.B., M.D.
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A BACTERIOLOGIC STUDY OF EXTIRPATED TONSILS.—Louis A. Julianelle, Ph.D., Philadelphia, Penn.

Tonsils play a definite role in focal infections. Series consists of 147 patients who had tonsils removed for hypertrophy or septic conditions.

Hemolytic streptococcus	90.4 percent
Staphylococcus	62.5 percent
Streptococcus viridans	31.2 percent
M. catarrhalis	19.7 percent
B. influenza	17.0 percent
Pneumococcus	8.8 percent
B. mucosus	5.4 percent
B. diphtheria	4.0 percent
Non-hemolytic streptococcus	1.3 percent

Staphylococci and M. Catarrhalis are considered normal inhabitants of the throat and only occasionally are they pathogenic.

The observation of the author that, "These organisms were isolated from within the tissue of diseased tonsils, so it is reasonable to asume that they were concerned in part in the production of the abnormal condition," is well taken. Why the B. mucosus is only regarded as a saprophyte simply because it happens to be found in a relative small per cent of cases (5.4 per cent) is not easily understood. B. diphtheria which appears frequently in normal mouths and reported four per cent in this series has been proven pathogenic or of a virulent type in about 15 per cent of the cases in which it is present. These cases, at least, should be considered pathogenic. It is very difficult to say just how much effect one or another organism has or may have but it would appear unwise to base any such deduction on its numerical or per cent incident alone.

EYE, EAR, NOSE and THROAT

Edited by Jas. C. Braswell, M. D.
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THE CAUSES OF PERSISTENT OTORRHOEA AFTER A SIMPLE MASTOIDECTOMY.—Emerson, F. P.: Ann. Otol., Rhinol., & Laryngol., 1924, xxxiii, 214.

From the patient's point of view, persistent otorrhoea following a mastoid operation means an unsuccessful result. The surgeon feels or should feel that there has been some fault in his operative technique or dressing. The causes of a persistent otorrhoea are classified by the author as follows:

1. Lack of surgical judgment in the after care.

2. Too early removal of the mastoid cortex before infection has been limited by a leucocytic barrier. This was more frequent before the days of the X-ray than at present. Rarely is it necessary to interfere surgically before a week from the time of an early incision of the membrana tympani.

3. Incomplete exenteration, especially the deep layer of the posterior canal cells.

4. Too active surgery in the region of the adi-

tus which delays the walling off of the middle ear and exposes the mastoid cavity to re-infection.

5. Failure to recognize the origin of the infection such as the infection of the nasal sinuses. Re-infection of the mastoid may occur from such sources.

6. Arrest of tissue repair due to poor resistance of the patient.

7. Osteomalacia.

8. General systemic conditions due to syphilis or tuberculosis.

INTRASEPTAL IMPLANTATION IN ATROPHIC RHINITIS.—Pollock, H. L.: Ann. Otol., Rhinol., & Laryngol., 1924, xxxiii, 205.

In the treatment of atrophic rhinitis the author uses implants from the nasal septal cartilage of the donor. An incision is made in the mucoperichrondium of the septum and the membrane carefully elevated, care being taken not to tear the membrane as this defeats the purpose of the operation. The cartilage transplant is as large as possible and is brought in contact with as much of the elevated membrane as possible, in order to insure proper nourishment. The incision is closed with a small suture. It is preferable to operate upon only one side of the nose at one operation and then wait two or three months before operating upon the opposite side.

In cases which have been under observation for three years the implants are still approximately the same size as when first implanted.

FUNDAMENTAL CONSIDERATIONS UNDERLYING ROENTGEN THERAPY OF TONSILS.—Lewis, E. R.: Ann. Otol., Rhinol. & Laryngol., 1924, xxxiii, 198.

Lewis is of the opinion that some of the arguments favoring roentgen-ray therapy of tonsils are misleading and dangerous as the knowledge of some practitioners and of patients relative to physiology is not sufficient to protect them against misconcepions.

The object of X-ray treatment is the destruction of lymphoid tissue. In the author's opinion it causes destruction of surrounding tissue and of the lymphatic tissue below and beneath the tonsil.

The large size of the tonsil does not necessarily indicate disease; often apparently normal tonsils are large. The tonsil serves as a protector against infection in the same manner as the deeper cervical lymphatics and its destruction in the absence of definite evidence of disease is unwarranted. Frequently the tissue becomes enlarged to take care of a temporary infection.

The employment of such a powerful agent as the X-ray by those unfamiliar with the physiological and pathological fundamentals of the area in which they are working is dangerous.

A STUDY OF THE BACTERIOLOGY OF THE NORMAL AND INFLAMED CONJUNCTIVA WITH SPECIAL REFERENCE TO THE PRESENCE OF STREPTOCOCCUS AND PNEUMOCOCCUS.—McKee, S. H.: Canadian M. Ass. J., 1924, xiv, 216.

McKee reaches the following conclusions:

1. The normal conjunctiva may harbor pathogenic organisms causing no symptoms.

2. A major surgical operation should never be performed upon the eye without a previous careful examination of the lachrymal fluid for pathogenic organisms.

3. For the thorough examination of the conjunctiva cultures are necessary.

4. Examination by smear alone often gives negative findings in cases in which pathogenic organisms would be easily demonstrated by other bacteriological methods.

5. Pathogenic micro-organisms, such as the streptococci and pneumococci, are best demonstrated by use of blood-sugar plates. This method is simple, and by means of it the presence of the streptococcus and pneumococcus may be easily demonstrated in from twenty-four to forty-eight hours.

INDICATIONS FOR AND CONTRAINDICATONS TO TONSILLECTOMY IN ADULTS.—Smith, S. MacC.: Therap. Gaz., 1924, 3 s, xl, 13.

The tonsils should be carefully examined and the color of the tonsil as well as the pillar should be noted. An attempt should be made to determine if free pus can be expressed from the tonsil or caseous matter. Small tonsils may cause greater disturbance than very large tonsils. A tonsil that contains free pus is a menace to health and should be removed whether it be large or small. The removal of extremely large tonslls is justified even though they do not show any definite evidence of disease the obstruction to swallowing and breathing is sufficient. In diphtheria carriers negative culture may be obtained within a short time after tonsillectomy. In the case of persons who are subjected to repeated attacks of tonsillitis, quinsy and frequent colds associated with sore throats, removal of the tonsils is indicated as a preventative measure.

Such general conditions as rheumatism, headaches, excessive fatigue, vertigo, etc., may be due to absorption of toxic material but the foci of infection should be carefully searched out.

Tonsillectomy is contra-indicated when (1) nothing is apparent in the tonsils to indicate that they are directly or indirectly the focus of infection. (2) During the progress of acute infections; (3) in haemophiliacs; (4) when the Wassermann reaction is positive.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M. D.

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THE RATIONAL TREATMENT OF FRACTURES OF THE UPPER END OF THE HUMERUS: REPORT OF END-RESULTS.—James Warren Sever. Journal A. M. A., June 2, 1923, p. 1603.

Author emphasizes the absolute necessity of the abduction treatment of fractures of upper end of the humerus and notes the generally poor results obtained in these fractures as a result of the usual method of treatment with reference to subsequent function. He declares that better results will be obtained in less time if traction following the reduction of the fragments is used in the abducted and outwardly rotated and elevated position rather than by using the older and usual method which employs the shoulder cap, sling, and Velpeau bandage.

Classification of Fractures of Upper End of Humerus.

Class 1. Simple fracture of greater tuberosity without displacement: A. With upward and out-

ward rotation of fragment, may be associated with dislocation of shoulder.

Class 2. Simple fracture of surgical or anatomic neck without displacement, or with impaction of fragment: A. With displacement of fragment, but without dislocation of head: B. with displacement of fragments and complete dislocation of head, generally subcoracoid.

Class 3. Fracture of neck of humerus, generally comminuted, with fracture of shaft, without dislocation of head.

Conclusions

These points are essential in the treatment of fractures of the upper end of the humerus.

1. Anatomic restoration of fragments is best obtained by abduction, outward rotation, and elevation of the humerus.

2. Traction in this position is essential for from four or five days to two or three weeks.

3. A satisfactory ambulatory splint may be employed rather than bed treatment.

4. Better and more quickly obtained functional results may be secured by this method than by any other.

5. Operation, except in certain cases of fracture dislocations, is generally unnecessary to restore fractured surfaces.

VERTEBRAL AFFECTIONS. LOW BACK PAIN. —Southern Med. Jour., June, 1923, p. 478.

Author concludes that if one does not find consistently guarded movements, definite limited motions of lumbar spine, or persistent and consistent faulty attitude or deformity, there can be little, if any, disability due to the alleged injury or disease of the spine or sacro-iliacs.

He gives five definite causes for low back pain: (1) trauma, including strains, sprains, fractures, dislocation, etc.; (2) faulty posture, with relaxed ligaments and muscles; (3) diseases of the spine and sacro-iliac joints; (4) intra abdominal and pelvic pathology; (5) skeletal malformations, defects, and deformities. Treatment is not discussed.

SPONDYLOLISTHESIS.—S. Kleinberg. Annals of Surgery, April, 1923, p. 490.

In this article, the author emphasizes three points: (1) the condition occurs more frequently in males than we have heretofore believed; (2) the lesion presents a radiographic appearance which is pathognomonic, and (3) trauma is frequently the direct cause, or at least, a very important factor, in its etiology.

The fifth lumbar vertebra is tilted forward so that its superior surface is directed upward and forward. This inclination has been assumed to be a weak point in its relationship with the sacrum. The radiographic appearance of the lumbo-sacral region varies according to the location of the X-ray tube in relation to the last lumbar vertebra. In a normal spine the lumbar vertebrae all appear as quadrilateral shadows in an antero-posterior view of the central rays pass through the lumbo-sacral region. If the tube is opposite the dorsal region all the lumbar vertebrae appear rectangular except the last one. The area occupied by the fifth is diminished and one sees two oblong masses joining medially at an obtuse angle. In spondylolisthesis, with the last lumbar vertebra dislocated anteriorly, in a front view of the patient we are looking at the superior surface of the last lumbar vertebra, and this condition can be detected in an antero-posterior X-ray. A lateral view will clinch the diagnosis, but in the very obese this is difficult or impossible to get.

It has been argued that such a severe lesion could hardly be the result of the degree of trauma usually mentioned by these patients. Probably these patients have an anatomical or developmental defect in this region, but there is evidence to support the idea that trauma is the primary etiologic factor.

SACROILIAC ARTHROSIS OBLITERANS.—By Edward S. Blaine, M.D. Am. Jour. of Roentgenology, March, 1923.

Blaine presents facts acquired from 1800 cases, 18 of which present unusual changes in the sacro-iliac joints. Symptoms enumerated are—"dull pain, soreness and stiffness of the back, with uncomfortable feeling in the lower spine," coming on gradually, progressing for several months to a year or more. Incipiency indefinite, movement of spine restricted. Pathology and etiology not stated except that it is an infectious osteoe-arthritis.

Joints changes—destructive and constructive progress, joint cartilage is absorbed, joint is fused and joint lime disappears.

In his X-ray differential diagnosis, he mentions septic arthritis. This condition is undoubtedly a septic arthritis and of the hypertrophic osteo-arthritis type. It is not necessary to differentiate this from tuberculosis of the sacro-iliac joint.

BOOK REVIEWS

MODERN METHODS OF TREATMENT By Logan Clendening, M. D., Assistant Professor of Medicine, Lecturer on Therapeutics, Medical Department, University of Kansas; Attending Physician, Kansas City General Hospital; Physician to St. Luke's and St. Mary's Hospitals, Kansas City, Mo. with Special Chapters by Drs. H. C. Anderson, J. B. Cowherd; Carl O. Rickter; F. C. Neff; E. H. Skinner and E. R. DeWeese. Cloth, Illustrated, 692 pages, Price $9.00, C. V. Mosby Company, St. Louis, 1924.

Of all dry things and reiteration of monotony, treatises on medicine are supposed to head the list. If this is true the rare exception to that state of medical literature at once, and deservedly, attracts attention and merits unusual praise and recognition. Surely few will accord any other recognition to this work by Dr. Clendening, every page of which is carefully arranged and presented in rare and entertaining style. We believe few practitioners of medicine can read this work without having wide and new paths of thought called to his attention. Few will read it without receiving great benefit.

MANAGEMENT OF DIABETES. By George A. Harrop, Jr., M. D. Associate in Medicine, College of Physicians and Surgeons, Columbia University and Assistant Visiting Physician, Presbyterian Hospital, N. Y. Paul B. Hoeber, New York, 1924. Price $2.00.

EAT YOUR WAY TO HEALTH. By Robert Hugh Ross, A. B., M. D., 12mo. Cloth. 246 pages. $2.00 net; Funk & Wagnalls Company, Publishers, New York.

THE SURGICAL CLINICS OF NORTH AMERICA (Mayo Clinic Number - April 1924) The Surgical Clinics of North America (Issued serially, one number every other month). Volume IV Number 11 (Mayo Clinic Number - April 1924) 295 pages with 88 illustrations. Per Clinic year (February 1924 to December 1924). Paper $12.00; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

THE SURGICAL CLINICS OF NORTH AMERICA (Philadelphia Number) The Surgical Clinics of North America (Issued serially, one number every other month). Volume IV Number I Philadelphia Number February 1924) 302 pages with 90 illustrations. Per Clinic year (February, 1924 to December 1924). Paper $12.00; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

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